How to Prepare Your Paper in LaTeX for IOE Graduate Conference 2017

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Abstract
This is a working template for the research paper to be presented at the IOE Graduate Conference - 2017. The template has been typeset in LaTeX. You have to replace certain sections of this template by your content and produce a pdf file as final output. Format for different types of elements that could occur in the paper are already defined in this template. The authors are to strictly follow the style/formatting as defined in this template for consistencies in a single paper and across different papers.The contents of the paper appears in a two column format, with an exception of the paper title, author names, affiliations, abstract and keywords. Your paper should be limited to 8 pages and abstract should not exceed 300 words. Each of the keywords need to be separated by – as given in the example below.

Keywords
IOE Graduate Conference – LaTeX – Template

1. Introduction

In the past, the papers for IOE Graduate Conference were submitted as Microsoft Word document. Although standard templates were created for the submission, there used to be a lot of technical problems in the submitted documents. Only a few papers seemed to follow proper guidelines. This resulted in difficulty in compiling the final conference proceeding. To overcome this, the conference committee has decided to use LaTeX as the standard and only tool for preparing the paper to be presented at the IOE Graduate Conference starting from the year 2015. In word processing softwares like Microsoft Word, it is very likely that people create unorganized document, whereas in typesetting software environment like LaTeX, one has to create a document in an organized fashion.

On the other hand, LaTeX is being adapted as the standard tool for producing technical documents by most of the top class universities and institutions. This means that if the graduate students do not learn LaTeX at the right time, they will poise some limitations on themselves. So, it should be taken as an opportunity to learn LaTeX. A lot of resources for learning LaTeX can be found online. It would take 10–20 hours of learning for getting started with LaTeX and would be beneficial for life long.

2. What is LaTeX?

LaTeX is a document preparation system for the TeX typesetting program. It offers programmable desktop publishing features and extensive facilities for automating most aspects of typesetting and desktop publishing, including numbering and cross-referencing, tables and figures, page layout, bibliographies, and much more.

- A family of programs designed to produce publication-quality typeset documents.
- Particularly good at working with mathematical symbols.
- WYSIWYM[1] rather than WYSIWYG[2].

The history of LaTeX begins with a program called TeX. In 1978, a computer scientist by the name of **Donald**

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[1]What You See Is What You Mean
[2]What You See Is What You Get

Knuth grew frustrated with the mistakes that his publishers made in typesetting his work. He decided to create a typesetting program that everyone could easily use to typeset documents, particularly those that include formulae, and made it freely available.

Knuth's product is an immensely powerful program, but one that does focus very much on small details. A mathematician and computer scientist by the name of Leslie Lamport wrote a variant of TEX called LATEX that focuses on document structure rather than such details.

3. Getting the LATEX Software

There are two major standard distributions of LATEX:

- TeXLive
- MikTeX

These are freely downloadable from the internet. TeXLive works in all the major PC platforms like Windows, Unix, Linux, and Mac. Whereas, MikTeX is for Windows only. When you install these, you also get the TeXWorks editor as your frontend. More than a dozen other frontend GUIs are available for LATEX. Some of these are:

- TeXMaker
- TeXnic Center
- WinTeX
- …

4. Template Structure

This LATEX template resides on a folder with the following files/folder:

example.tex LATEX source file of this document. Example on using the template with some description.

article.tex Similar to example.tex, but with very minimal content (almost blank).

pagenum.tex Contains the code for starting page number which will be edited during final compilation.

IOEGC2017.cls LATEX class file for managing the styles and formats of the document. Prohibited to edit.

refs.bib File containing the bibliography database in BibTeX format.

Graphics Folder for keeping all the graphics files used in the document.

example.pdf Produced by compiling example.tex.

article.pdf Produced by compiling article.tex.

5. Sections

LATEX supports section headings upto 3 levels via the commands `\section`, `\subsection`, and `\subsubsection`. These have been used in this document in section 9. You can use their starred variants (`\section*`, `\subsection*`, `\subsubsection*`) to suppress section numbering which has been demonstrated in the *Acknowledgment* section.

6. Placing Figures

One can generate technical graphs or diagrams from LATEX also, but this requires another level of expertise. So, it is very common to include figures generated from other sources or programs. Here are a few examples on placing figures with proper captioning and label for cross referencing. The most suitable format for figure files to produce final output as pdf are:
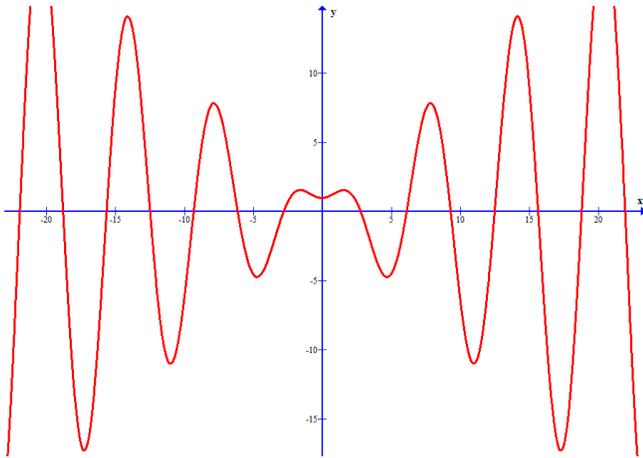
1. PNG
2. PDF
3. JPEG

Figure 1: In-text Picture

Figure 1 takes the width of a column and Figure 2 takes the width of the entire width of the page.

7. Creating Tables

Table 1 is an example of a simple table in LaTeX. To create complex tables, please refer to LaTeX manuals or online resources. Use `\begin{table*}` to take up the entire page width.

Table 1: A simple table

SN	Department	Capacity
1	Civil	192
2	Architecture	48
3	Electrical	48
4	Electrtonics	48
5	Computer	48
6	Mechanical	48
	Total	432

8. Mathematics

LaTeX has very rich features for typesetting mathematics. Please refer to LaTeX and AMSmath manuals or online resources for further information. Here are a few examples.

The formula given in equation 1 can be used to determine the roots of a quadratic equation of the form:

$$ax^2 + bx + c = 0$$

Here, a, b, and c are constants/coefficients and x is a variable.

Numbered equation:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \tag{1}$$

Equation without a number

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

9. Lists

9.1 Simple Lists

Simple Bulleted and Numbered lists have already been presented in Sections 3 and 6 respectively.

9.2 Nested Lists

Lists can be nested upto three levels in LaTeX.

9.2.1 Numbered Nested List

Here is a nested numbered list:

1. Fruits
   (a) Apple
   (b) Orange
2. Vegetables
   (a) Spinach
   (b) Carrot

9.2.2 Bulleted Nested List

Here is a nested bulleted list:

- Fruits
  - Apple
  - Orange
- Vegetables
  - Spinach
  - Carrot

Figure 2: Placing a wide picture

9.2.3 Mixed Nested List

Here is a mixed nested list:

1. Fruits
   - Apple
   - Orange
2. Vegetables
   - Spinach
   - Carrot

9.3 Description List

This is for dictionary-like word and description list.

Word Definition ...

Concept Explanation ...

Idea Text ...

10. Paragraphs with heading

Hello Place your paragraph heading inside the curly braces and your paragraph text here.

Welcome The paragraph heading will look distinct than the normal text.

11. Referencing

The list of references should be produced using BibTeX. The BibTeX entries should be placed in the "refs.bib" file. Please refer BibTeX manuals or online resources on creating bibliography databases using BibTeX and citation. You can easily create bibliography database files using the GUIs like TeXMaker or JabRef. You can even search for BibTeX entries for a majority of publications at Google Scholar (`http://scholar.google.com`)

Examples: This is citation one[1] and this is another[2].

12. Compilation

Since, this template contains a small table of contents and the reference list is generated using BibTeX, the LaTeX source file should be processed four times in the following sequence to generate the final pdf output.

1. PDFLatex

2. BibTeX

3. PDFLatex

4. PDFLatex

13. Submission

Before submitting the paper, the source file must be compiled without any errors. The files that need to be submitted are article.tex, pagenum.tex, refs.bib, article.pdf, IOEGC2017.cls, and Graphics folder. All these should be placed in a folder, compressed/zipped and submitted electronically.

14. Review

Your paper will be reviewed by expert(s) before the conference. Comments may be provided in the submitted pdf file. You have to recompile your LaTeX source file as described in section 12 and resubmit as described in section 13.

Acknowledgments

The authors are grateful to Center of Applied Research and Development (CARD) for this wonderful opportunity.

References

[1] Leslie Lamport. *LaTeX: A document preparation system, User's guide and reference manual*. Addison-Wesley Professional, 2nd edition, 1994.

[2] Tobias Oetiker, Hubert Partl, Irene Hyna, and Elisabeth Schlegl. The not so short introduction to latex 2ε. 2001.